Group Effectiveness Research Laboratory

DEPARTMENT OF PSYCHOLOGY · UNIVERSITY OF ILLINOIS · URBANA, ILL.

A METHODOLOGICAL AND THEORETICAL CONSIDERATION OF THE IMPLICATIVE MEANING PROCEDURE

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Abstract

The unidimensional and multidimensional models of attitude structure were compared by means of an attitude instrument, the implicative meaning (IM) procedure. The unidimensional model consider the IM procedure an indirect measure of attitudinal affect, whereas the multidimensional model considers it a measure of attitudinal cognition that has some overlap with measures of affect. Correlations between IM scores and an independent measure of affect, semantic differential (SD) evaluations, were obtained. The average level of correlation was quite low ($\bar{x}_r$'s about .40), generally controlling less than 30% of the reliable common variance, across 2 experiments and 3 samples. Several other hypotheses were derived from the models and tested in a factorial design in the second experiment, the results generally supporting the multidimensional model and failing to support the unidimensional model.

A Methodological and Theoretical Consideration of the Implicative Meaning Procedure[1]

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Research concerning attitude measurement has generally taken one of two theoretical orientations, considering attitude as either a unidimensional or a multidimensional construct. Those concerned with operational measurement have usually defined attitude as having a single component: affect or feeling. Thurstone (1931), for example, defined attitude as "the affect for or against a psychological object (p. 261, italics deleted)." Similar definitions can be found in Edwards (1957), Fishbein (1963, 1965a), Osgood, Suci, and Tannenbaum (1957), Rhine (1958), and others. Such well-known instruments as the semantic differential (Osgood et al., 1957) and the Likert and Thurstone techniques (see Edwards, 1957) have been the principal measures employed.

In a recent paper, Fishbein (1965a) discussed a number of reasons for a unidimensional consideration of attitude structure. Two reasons were outstanding:

> (a) ....although "attitudes" are often said to include all three components (i.e., affect, cognition, and conation), it is usually only evaluation or "the affective component" that is measured and treated by researchers as the essence of attitude (p. 108).

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[1]This material is based upon a thesis submitted in partial fulfillment of the requirements for the B.S. degree with distinction in Psychology at the University of Illinois. The research was partially supported by Contract NR 177-472, Nonr 1834(36) with the Advanced Research Projects Agency (ARPA Order No. 454) and the Office of Naval Research (F. E. Fiedler and H. C. Triandis, Principal Investigators), and also partially supported by National Science Foundation Grant GY 1005 (K. T. Hill, Principal Administrator). I am indebted to H. C. Triandis for advice and guidance throughout the study, to M. R. Fehling for assistance with the computers, and to E. E. Taylor for assistance with data collection and analysis. Critical comments from D. A. Summers and H. C. Triandis improved earlier versions of the manuscript.

(b) Multidimensional concepts are notoriously difficult to employ in rigorous theory, and they create almost unmanageable problems when theory is translated into research (p. 108).

Those concerned with placing the concept in a theoretical network consisting of several social psychological propositions have generally employed three components: affect or feeling, cognition or belief, and conation or behavioral intentions. Within this framework, there has developed a considerable body of theory and research (e.g., Allport, 1935; Davis & Triandis, 1965; Harding, Kutner, Proshansky, & Chein, 1954; Katz & Stotland, 1959; Krech, Crutchfield, & Ballachey, 1962; Rosenberg & Hovland, 1960; Smith, Bruner, & White, 1956; Triandis, 1967).

In addition to the unidimensionalists instruments for measuring affect, a variety of instruments have been developed to measure the various attitudinal components. For example, the Bogardus (1925) social distance measures and Triandis' (1964, 1967) behavioral differential were constructed for studying behavioral intentions. Beginning with the Katz and Braly (1933) adjective checklists, much work has been done on methods of investigating attitudinal cognition (e.g., Scott, 1962; Triandis, 1967; Triandis, Kilty, Shanmugam, Tanaka, & Vassiliou, 1968).

The present study was concerned with further delineating some aspects of attitude structure--namely, the relationship between affect and cognition--by means of an attitude instrument, the implicative meaning (IM) procedure, developed to measure the cognitive component of attitude (Davis & Triandis, 1965; Triandis, 1967). That is, since the instrument bears considerable resemblance to Fishbein's (1963) procedure for measuring affect, it was felt that the two theoretical orientations

could be contrasted and investigated in detail by a methodological and theoretical analysis of the properties of the (IM) procedure. This rationale, of course, also implies that the models presented by Fishbein (1963) and Triandis (1967) are representative, respectively, of the unidimensional and multidimensional viewpoints.

According to Fishbein's (1963) theory, the attitude toward any object is a function of the "beliefs about the object" and the "evaluative aspects of those beliefs." That is, the attitude toward some object is a function of the probability that the object is related to various other objects and of the affect toward these associated objects. By multiplying these two scores together for each such association and summing all the resulting products for a given attitude object, a satisfactory index of the actual attitude toward a psychological object may be derived. In algebraic terms, $A_o = \sum_{i=1}^{N} B_i a_i$, where A_o is the attitude toward the object, B_i is the strength of belief "i" about the object, a_i is the evaluative aspect of B_i, and N is the number of beliefs (Fishbein, 1963, p. 234).

Furthermore, although Fishbeing (1965a, 1966) has argued that cognition and behavioral intentions should be treated as constructs independent of attitude, he has essentially subsumed them under affect--as indirect methods of measuring affect.

The IM procedure was first developed by Davis and Triandis (1965) to complement their measures of affect and behavioral intentions, since they were interested in applying the multidimensional attitude construct to behavioral prediction (i.e., predicting negotiations outcomes between Negroes and whites). Belief statements were presented to subjects in

the form of "if, then" statements, the "if" parts containing the attitude objects and the "then" parts containing implicated associations with other objects (e.g., If one has INTEGRATED HOUSING, then one has slums.). For each attitude object, a series of associated objects (implicates) was presented, and evaluative and probability rating were assessed as in the Fishbein (1963) procedure. Summated products also constituted the scores.

Although the techniques are quite similar, the theoretical conceptualizations are clearly in opposite directions. Since both formulations have supportive evidence,[2] the following two experiments were designed as a test of a number of contrasting and similar propositions and hypotheses of the two orientations in more detail than has been previously done.

In both experiments, there is one basic hypothesis that will be tested. As discussed, according to Fishbein's (1963) theory, measures such as the IM procedure are indirect measures of attitude, where attitude per se is the degree of affect held toward a psychological object. Therefore, the correlation between measures obtained from the IM procedure and direct measures of affect will be high.

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[2] See, for example, Fishbein (1963, 1965b, 1967) and Fishbein, Landy, and Hatch (1965) for data supporting the Fishbein (1963, 1965a) affect model of attitude. Davis and Triandis (1965), Thomanek (1968), Triandis, Fishbein, Hall, Shanmugam, and Tanaka (1967), and Triandis, Kilty, Shanmugam, Tanaka, and Vassiliou (1968) have provided support, directly or indirectly, for considering the IM procedure as a measure of attitudinal cognition.

By contrast, the multidimensional theorists have maintained that the various components of attitude are not entirely independent (e.g., Katz & Stotland, 1959; Rosenberg & Hovland, 1960; Smith et al., 1956; Triandis, 1967). Present consistency theories (e.g., Festinger, 1957) specifically emphasize that, although a relationship between affect and cognition will typically be observed, the overlap in variance between measures of affect and cognition will be relatively low.

The procedure for testing the degree of relationship between affect and cognition, of course, is to correlate IM scores with affect scores. However, significance of correlation is, to a large extent, simply a function of sample size. As Hays (1963) has pointed out, "There is surely nothing on earth that is completely independent of anything else. The strength of an association may approach zero, but it should seldom or never be exactly zero (p. 326)." Hays further stipulates that results that deserve serious attention are those that not only are significant but also account for a considerable percentage of the common variance (p. 536).

Such an argument seems quite appropriate when one is considering correlation coefficients. All that is needed, for instance, to achieve significance at the .05 level with only 40 df is a coefficient of .30, although the coefficient accounts for only 9% of the common variance. Variance controlled, then, is the most precise measurement of any relationship between the instruments, and a hypothesis may now be stated.

The relationship between IM scores and some independent measure of attitudinal affect should be minimal, at best accounting for no more than 30% of the common variance--or, in terms of a correlation, not ex-

ceeding a coefficient of .55.

A test of the models by this procedure, however, raises the question of reliability, which was not specifically investigated in the present study. A perusal of the literature indicates that reliability has not been tested during the past 14 years of use of IM sorts of instruments (see Fishbein, 1967, for a review of some of the related methods).

There is a method, though, of deriving an estimate of reliability of IM scores. The basic sort of scale used in this and similar instruments is a semantic differential (SD) scale. These scales have a rather stable reliability of about .85 (e.g., David, 1966; Osgood et al., 1957). Since IM scores are based upon the products of two SD scales (i.e., as discussed earlier, probability and evaluative scales multiplied together), a rough estimate of the reliability of the IM procedure would then be the square of the reliability of a single scale, or about .72. This estimate, additionally, is probably an underestimate, since some of the error variance should overlap, and the present approximation treats this variance as independent for the two scales.

On the basis of these reliability considerations, one would expect attenuation effects to occur, and, by this criterion, an uncorrected coefficient of at least .45 is needed in order to control 30% of the reliable common variance.

It may be further argued that the Fishbeing (1963) model would predict correlations between IM scores and affect scores that approach the upper limit of the pooled reliabilities of the two measures, which, in this case, is .78.

The hypothesis may now be restated more specifically by referring to a continuum of correlation coefficients ranging from zero to unity. According to the Fishbein (1963) model, the correlations, converted to z scores, should be normally distributed with an upper limit at z = 1.0454, r = .78, the upper limit of reliability. According to the multidimensional approach, the correlations, converted to z scores, should be distributed with an upper limit of z = 0.4847, r = .45, the point which represents 30% of the reliable common variance.

Experiment I

Method

Subjects. Two samples completed the questionnaire, the first consisting of 40 white male and 35 white female students from the high school in Urbana, Illinois. The second sample was 84 white male students from the University of Illinois Psychology 100 Subject Pool, serving in partial fulfillment of a course requirement.

Questionnaire. The questionnaire consisted of three parts, the first two sections containing the attitude measures. In both parts, the same 12 stimulus concepts (PEACE, FREEDOM, CRIME, WEALTH, POWER, SYMPATHY, SUCCESS, KNOWLEDGE, RESPECT, TRUST, NEGOTIATIONS, AND INTEGRATED HOUSING)[3] were employed. Demographic data were collected in the last part of the questionnaire.

In the first section, subjects rated each of the stimuli over nine SC scales taken from a prior study with the IM procedure (Davis, 1966).

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[3] Where appropriate, the conventions of Osgood et al. (1957) will be followed; i.e., stimulus concepts are given in small capitals and scale adjectives in italics. Factor names are given in quotation marks.

A factor structure derived from the responses of white male subjects was used, which consisted of three factors that accounted for over 90% of the variance. Factor I, "evaluation," consisted of fair-unfair, good-bad, and valuable-worthless. Interesting-boring, profound-superficial, and important-unimportant constituted Factor II, "importance." Factor III, "familiarity," was composed of near-far, familiar-unfamiliar, and believable-unbelievable. The first factor was considered the measure of affect per se.

The scales were 7-point, the adjective associated with the factor given the value of 7 and the opposite adjective scored 1. Scales were later summed within factors, giving a final scale range from 3 to 21 points.

The second part of the questionnaire followed the general design of the IM procedure. Subjects were presented sentences in the form of an "if, then" clause. The stimulus concepts (attitude objects) appeared in the "if" part of the sentences, and the "then" part was left blank (e.g., If one has INTEGRATED HOUSING, then one has_____.), requiring subjects to complete the statements before doing any rating (c.f., Fishbein, 1967, pp. 395-396). Since subjects are usually supplied with implicates rather than giving their own, this deviated somewhat from the usual procedure (e.g., Davis & Triandis, 1965).

Beneath each blank (three blanks beneath each sentence) were a probable-improbable scale (scored 6 to 0) and a good-bad scale (scored +3 to -3). Three responses per concept were elicited. An example of the format can be found in Appendix A.

The last part of the questionnaire was a biographical data sheet, containing ten variables: sex, age, year in school, grade average,

father's and mother's occupations and educational levels, and the head of family's annual income. Since, in past research, the instrument has usually been used in regard to social issues (e.g., integrated housing, socialized medicine), it was felt that differences in socio-economic characteristics and sex, in particular, might influence IM responses.

Results

Since the Fishbein (1963) model considers both attitude measures employed in this study as essentially equivalent, correlations between IM scores and the SD "evaluation" factor were computed. As may be seen in Table 1, these correlations were, on the whole significant. For sample one, only the correlations for PEACE and CRIME were nonsignificant. The results for sample two were similar, with only the concept CRIME having a nonsignificant correlation. Considering the two samples as a unit, almost 80% of the correlations were significant. At first glance, then, these results would seem to substantiate those of Fishbein (1963, 1965b) and Fishbein, Landy, and Hatch (1965).

Table 1 about here

However, the general level of correlation was low, especially when the correlations are considered in terms of variance accounted for. Since Fishbein's (1963) theory is applicable to any attitude object, too, those presently employed may best be considered a sample from the universe of attitude objects, and mean correlations for each sample would then give more general indices of a relationship. The mean (determined after Fisher z transformation) for sample one was .39 and for sample two was .45,

Table 1

Correlations between IM Scores and SD Evaluations

	Sample One[a]	Sample Two[b]
PEACE	.10	.47
FREEDOM	.32	.49
CRIME	.09	.21
WEALTH	.40	.54
POWER	.40	.40
SYMPATHY	.56	.56
SUCCESS	.33	.60
KNOWLEDGE	.29	.38
RESPECT	.37	.55
TRUST	.65	.44
NEGOTIATIONS	.41	.24
INT. HOUSING	.64	.47
$\bar{x}_r$	.39	.45

[a] $r = .23$, $p < .05$; $r = .30$, $p < .01$

[b] $r = .22$, $p < .05$; $r = .28$, $p < .01$

respectively accounting for 15% and 20% of the common variance. There was no significant difference between the sample means ($z < 1$). Although most of the correlations reached a significant level, the greater part of the common variance was uncontrolled.

Even when the less than perfect reliability of the measures is taken into account, neither mean coefficient exceeded the criterion of .45, which would account for 30% of the reliable common variance. This is not entirely true for the hole distribution of correlations, however, since, for sample two, seven of the 12 coefficients did exceed the criterion. For the first sample, though, only three of the 12 coefficients surpassed the .45 level. In sum, then, 58.3% of the coefficients were within the critical region, and neither mean coefficient exceeded this level. For the first sample, at least, the main hypothesis concerning the relative independence of the two measures was confirmed, although the results were somewhat equivocal for the second sample.

It should be noted, though, that several objections may be placed against the present study, most notably concerning the number of beliefs employed (Fishbein, 1967) and the method by which subjects rated these beliefs (Fishbein, 1963). Although the number of beliefs will be considered in more detail in the second experiment, the following analysis is also applicable to this objection.

In the present study, both the probability and the evaluative scales were placed beneath the blanks where subjects supplied implicates. It may, therefore, be argued that subjects improperly rated the evaluative aspects of the belief statements. According to the Fishbein (1963) model, only the implicates should be rated on the <u>good-bad</u> scales--not

the entire sentence. The present study, however, quite closely replicated the method for obtaining implicates and ratings used by Fishbein et al. (1965), a study that was considered highly supportive of the Fishbein (1963) model.

It was also possible to directly compare this study with some previous results. Table 2 gives the results of significance tests between the mean coefficients for the two present samples and those of Fishbein (1965b) and Fishbein et al. (1965). Of the six tests, only one proved to be significant (Fishbein, 1965b, vs. sample one, $z = 2.08$, $p < .05$). It may also be noted that the coefficients in those studies accounted for from 13% to 56% of the common variance, the results of Fishbein et al. (1965), in particular, quite similar to the present study.

Table 2 about here

The results of the Fishbein (1965b) study were also somewhat ambiguous due to some methodological problems; i.e., judges supplied the evaluative ratings instead of the original subjects.

The last analyses concerned the correlations between the demographic characteristics of the sample and the IM and SD scores. Since these variables were generally unrelated and the summary tables were of considerable length, no tables will be presented. The principal variables to correlate with the attitude measures were father's occupation and education and the family head's annual income, but these variables were more highly intercorrelated with themselves than with the attitude scores. Most significant correlations were minimal, and no coefficient

Table 2

Comparison Between Present Study and Previous Results

Fishbein et al (1965)	vs.	Present	Z
$r_1 = .36$		$r_1 = .39$	< 1
$r_1 = .36$		$r_2 = .45$	< 1
$r_2 = .58$		$r_1 = .39$	1.79
$r_2 = .58$		$r_2 = .45$	1.33

Fishbein (1965b)	vs.	Present	Z
$r = .75$		$r_1 = .39$	2.08*
$r = .75$		$r_2 = .45$	1.83

Note: N for Fishbein et al (1965) study was 179 for both coefficients and for Fishbein (1965b) study was 20.

*$p < .05$

was in excess of .39 (about 16% of the common variance). The overall amount of correlation was about what might be expected on a chance basis.

Experiment II

The second experiment was a replication and an extension of the first. A number of changes were made in the instrument to alleviate the ambiguities that resulted in the first experiment. Since the same stimulus concepts were used, though, a specific replication of Experiment I was allowed. In addition to the basic hypothesis, several others were also investigated.

Hypotheses and Rationale

Type of belief. Fishbein (1966, 1967) has argued that most attitude instruments have not used salient beliefs in assessing affect, in that salient beliefs are those held by an individual toward an attitude object, and not necessarily those supplied by a standard attitude questionnaire. All beliefs may be considered "indicants" of attitude, but only salient beliefs are "determinants" (Fishbein, 1967, p. 395). Since the Fishbein (1965) model would predict that the correlation between IM and affect scores for subject's own (free) beliefs should be greater than for scores based upon standard belief statements, both kinds were assessed.

It is hypothesized, however, that, if the IM procedure measures attitudinal cognition, then the relationship between IM and affect scores should be decreased by measuring salient beliefs. This statement, of course, is in operational terms, essentially a "test" of the discriminability of the definition.

A related issue concerning salience is that discussed by Rokeach (1961) and others, where salience is considered as the degree of ego-involvement. As an attempt to measure salience by this criterion, subjects were required to rate all beliefs (free and standard) on an importance scale. The more salient the belief, the greater will be its degree of importance.

Accordingly, it is hypothesized that free beliefs will be rated as more salient (more important) than standard beliefs.

Number of beliefs. Fishbein (1967) has also discussed the number of beliefs that must be taken into account in order to obtain a valid measure of attitude and also the relationship between the number of beliefs and saliency. Fishbein has hypothesized that a habit-family-hierarchy of beliefs are held toward any attitude object, and also that this set of beliefs encompasses an individual's salient beliefs (the "determinants" of an attitude). On the basis of span of attention studies, he posits six to 11 beliefs in a given hierarchy at a given time (Fishbein, . 1967, pp. 395-396).

The present study tested this assumption in terms of both free and standard beliefs. Subjects were given six standard beliefs, and six free beliefs were elicited from all subjects, allowing scores to be computed on both three and six beliefs. The first number was chosen both because only three beliefs had been elicited in Experiment I and also because it was well below the number Fishbein (1967) hypothesizes is in a hierarchy, whereas six fits his criterion.

Scoring procedures. Recently, Thomanek (1968) found a methodolo-

gical problem in the scoring techniques. The method used in Experiment I conformed to Davis and Triandis (1965) and Fishbein et al. (1965). The evaluative scale (a_i) was scored +3 to -3, while the probability scale (B_i) was scored 6 to 0, since it was felt that subjects perceived the probability scale in a mathematical sense as ranging from zero to the highest degree of probability allowed by the number of scale intervals rather than in a bipolar sense. In other studies, though, the probability scales have been scored +3 to -3 (e.g., Fishbein, 1963).

Thomanek (1968) employed both procedures and, in certain cases, found significant differences in the resulting correlations for the same concepts. Since it appeared possible, then, to artifactually increase or decrease the degree of correlation, it was decided to extend Thomanek's analysis over both free and standard beliefs and a new set of concepts.

Method

Design and subjects. The experimental design took the form of a 2 (free vs. standard beliefs) X 2 (three vs. six beliefs) X 3 (scoring procedures) factorial design, with repeated measures over all factors. The subjects were 43 white male students from the University of Illinois Psychology 100 Subject Pool, who served as part of a course requirement.

Questionnaire and procedure. The questionnaire consisted of three parts, similar to Experiment I. Throughout the instrument, 13 concepts were employed, 12 repeated from Experiment I and one addition (SEGREGATED HOUSING). In all parts, the concepts were presented in the same fixed random order.

The first part was a modified form of the IM procedure. "If, then" sentences were presented to subjects, the stimulus concepts in the "if" parts and the "then" parts blank. Free beliefs were again elicited, and there were six blanks beneath each sentence. Under each blank were a probable-improbable scale and an important-unimportant scale. On the following sheet, the six blanks were repeated in the same positions but without the accompanying sentence. Beneath each of these blanks was a good-bad scale.

Two of each kind of sheet were stapled together, and the 13 pairs were administered with a sheet of carbon paper. The same responses, then, appeared on both sheets, but the implicates could be rated separately in the belief statement form and in the evaluation of the associated object form, precisely following Fishbein's (1963) proposed method. An example of the format is given in Appendix B.

In order to insure that the belief and affect ratings were properly completed, instructions for the completion of each sheet were also included at the side of each page.

Although several scoring procedures were used, subjects responded only to a 7-point bipolar scale, the intervals numerically unmarked. The scoring techniques were as follows: (a) the importance scale was scored 7 to 1; (b) the probability scale 6 to 0, 7 to 1, and +3 to -3; and (c) the evaluative scale 7 to 1 and +3 to -3. The cominations used were (the first set of numbers referring to the probability scale and the second to the evaluative scale): (a) 6 to 0 X +3 to -3; (b) +3 to -3 X +3 to -3; and (c) 7 to 1 X 7 to 1.

The second section of the questionnaire was the same as the first section of the Experiment I instrument. Subjects rated the 13 concepts on nine SD scales, comprising three factors. The "evaluation" factor again constituted the measure of affect per se.

The last section was a standard IM instrument, containing completed belief statements. The standard beliefs had been obtained in the usual manner by having subjects complete "if, then" sentences and using the appropriate number of implicates with the greatest frequencies of appearance. Since ten of the concepts in the present study had also been used in another study with a similar sort of instrument (Triandis et al., 1968), implicates for these concepts were chosen from the results of that study and of Experiment I. The six most frequent responses for each concept were therefore chosen from 1,077 responses per concept. Implicates for the concept NEGOTIATIONS were taken from the responses of the 159 subjects in Experiment I. Since it had originally been planned to replicate a part of the Thomanek (1968) study, the implicates for SEGREGATED HOUSING and INTEGRATED HOUSING were taken from that study. However, only two such attitude objects were employed, and a specific replication was unfeasible. A listing of the implicates is given in Appendix C.

The specific form of the questionnaire was identical to the first section (i.e., one page contained the sentence and the implicates for ratings as belief statements and the following page contained only the implicates for evaluative ratings). Instructions were again placed to the side of each page. Scoring procedures were the same as for the first section.

The order of administration of questionnaire sections was partially counterbalanced, approximately half the sample receiving section one first, and the other half receiving section three first, while all subjects received the middle section second.

Results

Replication of Experiment I. The principal concern of Experiment I was to measure the extent of overlap between the IM instrument and some standard measure of attitudinal affect--in this case, SD evaluations of the stimuli. In essence, this also contrasted the multidimensional and unidimensional models of attitude structure. Relevant data for the replication may be found in column 2 of Table 3 (excluding SEGREGATED HOUSING).

Table 3 about here

Sample differences are now quite apparent, much more pronounced than for the two samples in the preceding experiment. In addition, only half of the correlations were statistically significant (compared with the previous 80%), and the mean coefficient failed to reach a significant level ($\bar{X}_r$ = .28). It did, though, achieve significance with the inclusion of SEGREGATED HOUSING. Although the range of the coefficients was smaller, the general level of correlation was lower than previously.

When the coefficients are considered in terms of variance accounted for, the lower level of association is most noticeable. Including SEGREGATED HOUSING, the present coefficients controlled from less than 1% to 27% of the common variance. Even after taking the unreliability of the measures into account, it may be noticed that only two of the 13

Table 3

Correlations between IM Scores and SD Evaluations

	Scoring 1				Scoring 2				Scoring 3			
	3B		6B		3B		6B		3B		6B	
	SB	FB	SB	FB	SB	FB	SB	FB	SB	FB	SB	FB
SYMPATHY	58	34	56	44	54	24	51	36	57	22	46	29
INT. HOUSING	19	24	30	24	26	20	38	21	19	16	29	21
TRUST	38	28	53	34	37	30	52	36	36	22	53	29
RESPECT	64	32	53	27	58	33	51	29	59	39	57	26
NEGOTIATIONS	36	48	41	44	44	50	46	47	31	34	41	38
WEALTH	68	01	63	23	65	03	64	28	62	03	60	20
SUCCESS	33	34	29	30	38	32	38	29	41	32	33	28
CRIME	28	24	24	22	30	18	15	10	29	14	34	17
PEACE	18	35	23	34	30	45	36	36	27	18	28	24
FREEDOM	44	34	35	38	38	39	32	34	41	36	35	26
KNOWLEDGE	13	13	17	11	10	11	11	12	07	18	11	18
POWER	42	25	40	35	50	23	50	35	34	22	34	27
SEG. HOUSING	54	52	60	49	40	58	46	56	55	49	61	50
$\bar{X}_r$	41	30	42	30	41	31	42	33	39	25	41	27

Note: Scoring 1 = (6 to 0) X (+3 to -3); Scoring 2 = (7 to 1) X (7 to 1); Scoring 3 = (+3 to -3) X (+3 to -3); 3B scored over three beliefs; 6B scored over six beliefs; SB standard beliefs; FB free beliefs. Decimals have been omitted. N = 43; $r = .30$, $p < .05$; $r = .39$, $p < .01$.

correlations surpassed the .45 criterion and that the mean correlation was well below this level.

The correlations based upon six beliefs are similar, one coefficient exceeding the criterion and the mean well below this level (column 4). Results for the standard beliefs were also similar (columns 1 and 3). Nine of the 26 correlations exceeded the criterion, but neither mean coefficient did ($\bar{X}_r$'s of .41 and .42 for three and six beliefs, respectively).

Type of belief, number of beliefs, and scoring procedures. It may be recalled that there were a number of objections that could be raised against the results of Experiment I, such as the scoring procedures employed or the number of beliefs used to calculate IM scores. Some supporting evidence has already been presented, but, in order to correct or test for deleterious or artifactual effects from any such bases, IM scores were derived in a number of ways before being correlated with the SD evaluation criterion.

The three hypotheses concerning (a) the type of belief, (b) the number of beliefs, and (c) the scoring procedures were tested by an analysis of variance over the data presented in Table 3. Since z-converted correlation coefficients computed over the entire sample constitute the dependent variables, the analysis was treated as a non-repeated measures design. That is, scores for individual subjects per se did not appear in any cell. Correlations for each concept were considered as individual observations and were essentially treated as a random, replications factor nested within the other three factors. Treating the correlations for the 13 concepts as a random factor, as one would a subject sample, rather than as a fixed effect, somewhat reduced the

power of the test but did increase the generality of the results.

Table 4 about here

As may be seen in Table 4, a highly significant effect was obtained for the type of belief ($F = 22.48$, $df = 1, 144$, $p < .001$). Since the mean correlations for the standard beliefs were much higher than the means for the free beliefs (Table 3), this result supported the hypothesis that, by using salient (or free) beliefs, the relationship between IM scores and an independent measure of affect was significantly reduced compared to standard beliefs, a hypothesis contradictory to that presented by Fishbein (1967).

No effect was obtained for the number of beliefs ($F<1$, $df = 1, 144$), failing to confirm Fishbein's (1967) habit-family-hierarchy of beliefs hypothesis. A similar nonsignificant effect was found for the scoring procedures ($F<1$, $df = 2, 144$). Additional evidence concerning the lack of effects of the scoring procedures was obtained by intercorrelating the three methods. For the scores obtained over all six beliefs, the average correlations ranged from .90 to .95. For those derived over the first three beliefs, the average correlations were slightly higher and had a reduced range, the means ranging from .92 to .95. These coefficients accounted for from 81% to 87% of the common variance. The actual coefficients varied over a much wider range but were, in general, quite high. The different scoring procedures do not appear to have influenced the results.

Table 4

Analysis of Variance of Correlations between IM Scores and SD Evaluations (Experiment II)

Source	df	MS	F
Scoring (A)	2	1985658	< 1
Number of Beliefs (B)	1	1152885	< 1
Type of Belief (C)	1	63609923	22.48****
A X B	2	6063	< 1
A X C	2	763405	< 1
B X C	1	180404	< 1
A X B X C	2	21263	< 1
Error (w)		2829735	

**** $p < .001$

Lastly, as was expected, no interaction effects were obtained between the three factors; all such F ratios were extremely low.

Saliency as the degree of importance. Since the hypothesis that correlations between IM scores and some independent measure of affect would be reduced by measuring over free beliefs was supported, the assumption that free beliefs are more salient than standard does seem to be warrented.

However, based upon arguments presented by Rokeach (1961) and others concerning ego-involvement, an alternative test of the saliency of free and standard beliefs was proposed. The present test, in a sense, was more of an empirical test of saliency than the first, since no assumption was made in the measures per se that free beliefs are more salient than standard; instead, an independent measure of saliency was proposed that would test the assumption itself.

Belief statements were rated on "importance" scales, and it was predicted that free beliefs would be rated higher in terms of importance than would standard beliefs. These data are given in Table 5.

Table 5 about here

Seven of the 13 tests (all one-tailed) were significant, six of which supported the hypothesis (INTEGRATED HOUSING, $t = 6.02$, $p < .001$; RESPECT, $t = 2.86$, $p < .01$; NEGOTIATIONS, $t = 2.65$, $p < .01$; WEALTH, $t = 1.86$, $p < .05$; SUCCESS, $t = 1.87$, $p < .05$; SEGREGATED HOUSING, $t = 2.38$, $p < .01$). The test on SYMPATHY was significantly opposite in

Table 5

Differences in Saliency between Free and Standard Beliefs in Terms of "Importance"

	Free Beliefs		Standard Beliefs		
	$\bar{X}$	SD	$\bar{X}$	SD	t
SYMPATHY	15.93	6.37	13.67	5.61	2.02**
INT.HOUSING	14.14	5.29	20.86	7.36	6.02****
TRUST	13.56	5.33	13.88	5.31	< 1
RESPECT	15.19	4.58	17.44	5.90	2.86***
NEGOTIATIONS	13.46	6.13	16.28	6.31	2.65***
WEALTH	15.28	6.36	17.30	6.86	1.86*
SUCCESS	14.46	6.36	16.49	5.52	1.87*
CRIME	14.86	7.13	14.91	5.71	< 1
PEACE	12.49	5.33	11.58	5.26	1.11
FREEDOM	11.51	5.46	11.34	4.95	< 1
KNOWLEDGE	14.53	5.60	15.35	6.09	< 1
POWER	14.77	5.47	15.95	5.65	1.18
SEG.HOUSING	16.49	6.81	19.40	7.49	2.38***

NOTE: The lower the score, the greater the degree of importance. One-tailed tests.

*$p < .05$

**$p < .025$

***$p < .01$

****$p < .001$

direction to the hypothesis ($t = 2.02$, $p < .025$). None of the other six tests approached significance (four of which had t values less than one). The hypothesis was at best rather weakly supported.

A final analysis was prompted by the last one concerning the importance of the belief statements. The probability ratings were summed, and t tests were performed between the free and the standard beliefs, in a manner analogous to the tests conducted with the importance ratings. It was felt that, if the subjects were giving more salient (or ego-involving) completions to the belief statements than they were being supplied with in in the standard set, then probability ratings should be greater for the free beliefs than for the standard beliefs. In other words, subjects would give implicates that were more closely associated with the stimuli than those given them in a standard instrument. The results are shown in Table 6.

Table 6 about here

The results were quite similar to those described earlier for the importance ratings. Seven of the tests (all one-tailed) were significant (INTEGRATED HOUSING, $t = 7.58$, $p < .001$; RESPECT, $t = 2.65$, $p < .01$; NEGOTIATIONS, $t = 7.84$, $p < .001$; WEALTH, $t = 4.22$, $p < .001$; SUCCESS, $t = 2.01$, $p < .025$; CRIME, $t = 2.54$, $p < .01$; SEGREGATED HOUSING, $t = 7.26$, $p < .001$), and two additional tests approached significance (SYMPATHY, $t = 1.50$, $p < .10$; FREEDOM, $t = 1.56$, $p < .10$). The results for SYMPATHY, though, were contradictory to the hypothesis, which was also the case for the importance ratings.

Table 6

Differences in Probability between Free and Standard Beliefs

	Free Beliefs		Standard Beliefs		
	$\bar{X}$	SD	$\bar{X}$	SD	t
SYMPATHY	34.07	4.83	35.46	3.88	1.50
INT.HOUSING	31.65	6.79	22.07	4.83	7.58****
TRUST	35.12	4.34	34.65	4.01	< 1
RESPECT	33.83	3.72	32.12	4.58	2.65***
NEGOTIATIONS	35.07	4.33	29.32	4.87	7.84****
WEALTH	34.49	4.36	31.65	4.58	4.22****
SUCCESS	34.46	4.24	33.09	4.49	2.01**
CRIME	35.19	5.19	33.17	5.23	2.54***
PEACE	34.46	5.08	34.09	5.96	< 1
FREEDOM	34.49	5.79	35.86	4.20	1.56
KNOWLEDGE	34.44	3.94	33.84	4.44	< 1
POWER	34.72	4.68	34.28	4.50	< 1
SEG.HOUSING	33.23	7.70	24.05	2.81	7.26****

Note: The higher the score, the greater the degree of probability. One-tailed tests.

*p < .05
**p < .025
***p < .01
****p < .001

As may be seen in Table 6, the means for the other four tests were nearly identical (t values less than one). It may be noted, too, that six of the seven significant tests in the present data were for the same concepts as before (CRIME being the only addition). The majority of these tests, then, supported the hypothesis--were somewhat more consistent than the tests on the importance ratings.

Discussion

Affect and Cognition

It was hypothesized that the relationship between IM scores and some independent measure of attitudinal affect should be minimal, at best accounting for no more than 30% of the reliable common variance. On a continuum of correlations ranging from zero to unity, it was predicted from the multidimensional approach to attitude structure (e.g., Triandis, 1967) that correlations would not exceed an uncorrected coefficient of .45, whereas the unidimensional approach (e.g., Fishbein, 1963) predicted that the correlations would approach the upper level of reliability, or .78.

The results generally supported the multidimensional approach, which considers the IM procedure a measure of attitudinal cognition. The majority of the correlations did not exceed the .45 level, and, in all cases, no mean correlation was greater than the criterion.

For sample one of Experiment I (Table 1), 75% of the correlations were less than the criterion. Sample two, though, was somewhat equivocal, since only 42% of the correlations were within the criterion, although the mean coefficient did not exceed it. The results for the second experiment (Table 3) were much more consistent and unequivocal,

especially so since the experiment took into account the major criticisms applicable to Experiment I. Considering the results separately for each scoring method, in no case were more than 27% of the coefficients in excess of .45. For both experiments considered together and maintaining the same scoring methods, 71% of the correlations were within the critical level, and all mean coefficients were within the predicted area of the continuum.

In the two experiments, a total of 13 attitude objects and three types of IM instruments were employed, to which three samples responded. When the various attitude objects are considered as a sample of such objects and the Fishbein (1963) model is considered in terms of its generality and ability to predict, therefore, the mean level is quite low. The overall consistency of the present results, too, argues strongly for the multidimensional formulation.

A relationship between the instruments is not being denied. However, as Hays (1963) has stated, it is unreasonable to expect any two variables to be completely unrelated, and this applies equally well to IM scores and SD evaluations. The extent of overlap, though, was not large, and, for both functional and conceptual purposes, functional unity for each of the two instruments was generally demonstrated.

Saliency and Belief Type

Data presented in Tables 3 and 4 supported the hypothesis that, if free beliefs are more salient than standard, IM scores derived over free beliefs should correlate less well with a measure of affect than scores derived over standard beliefs ($F = 22.48$, $df = 1, 144$, $p < .001$), which

was contradictory to a hypothesis proposed by Fishbein (1967). This result, however, should be considered somewhat cautiously. There may simply have been a reduction in reliability in the case of the free beliefs, and thus an artifactual result produced by increased error variance.

A loss in reliability in this case, though, would be difficult to assess. As Fishbein (1965a) has asserted, any given belief may or may not be related to the actual attitude, and one also has probable and improbable beliefs and positive and negative implicates to contend with. The use of split-half techniques to estimate reliability could easily distort the measure in either direction. Test-retest methods are also not entirely applicable, since changes in the actual beliefs would need to be taken into account, not just the correlations of scores between times 1 and 2. No statistical procedures exist that could take into account differences in the elicited beliefs between the various times. Only for a standard sort of instrument would test-retest procedures be applicable. Corrections for varying levels of reliability, then, could become quite difficult. If an exact correction is a necessary prerequisite before testing the assumption as presented by Fishbein (1967), it becomes presently untestable.

Actually, it is quite obvious that there was some reduction in reliability, and, for this reason, the results should be considered with some caution. Our data show a larger association between IM and SD scores when scores are based on standard than on free beliefs, but there may well be no real differences between these two sets of associations.

This seems even more probable if the correlations over free beliefs in Experiment I are contrasted with those obtained on the standard beliefs in Experiment II, since the mean coefficients were quite similar.

Two other measures were also used to determine any differences in saliency between free and standard beliefs. The first of these involved measuring the importance of each belief statement, and it was predicted that free beliefs would be rated more important than standard. Six of 13 *t* tests significantly supported the hypothesis, while one was significantly contradictory. Any conclusions that may stem from considering free beliefs more salient than standard on the basis of importance ratings should also be conservative. Some support was found for the hypothesis, but, overall, it was rather weak.

A last measure concerned the probability ratings of the belief statements. The results were consistent with and somewhat stronger than the last analysis, but were rather surprising, since, theoretically, there is no justification for such results. According to Fishbein's (1963, 1965a) theory, improbable beliefs can contribute as much as probable beliefs to the overall score, which is the basic rationale for scoring probability scales from +3 to -3. It appears, though, that subjects tended to give implicates that were related in a probable or positive sense to the attitude objects, reducing the theoretical range of scores to "probable" belief statements. Since, for standard beliefs, the various elements may be combined in all possible combinations, it may well be that, in this case, standard beliefs are superior to free.

For that matter, since implicates are normally gathered from a subject population--not constructed by the investigator (as are Thurstone and Likert items)--the kind of standard belief statements used in the IM procedure may generally approximate any added advantages of eliciting free beliefs.

Of course, since some differences in importance and probability were found between free and standard beliefs, favoring the free beliefs, this argument, too, is limited. At any rate, to conclude that free beliefs are necessarily more salient than standard beliefs, as formulated by Fishbein (1967), is not at all warranted.

Related to the saliency issue is Fishbein's (1967) hypothesis that a habit-family-hierarchy of from six to 11 beliefs is held toward any given object at any given time. For this reason, one must also take into account the number of beliefs used to assess an attitude. This proposition was tested in Experiment II and was not confirmed ($F < 1$, $df = 1, 144$). Quite as satisfactory scores were derived and correlated with the criterion over either three or six beliefs. No significant or consistent differences were found.

The number of beliefs issue, then, presently devolves into principally a methodological conern--often simply a practical matter of how many beliefs an investigator may be able or care to take into account.

These last analyses may also lend support to a consideration of the IM procedure as a measure of attitudinal cognition, in that none of the hypotheses derived from Fishbein's (1963, 1965a, 1966, 1967) model were

fully supported--and two (type of belief and number of beliefs) were given no support.

Scoring Procedures

According to Thomanek (1968), scoring procedures may be an important methodological issue when using instruments such as the IM procedure. The present study employed several methods and generally found consistent results throughout. These results, though, should not be considered contradictory to Thomanek's. His results were more concerned with specific manipulations of concepts and implicates (pairing concepts with oppositely evaluated implicates, etc.), whereas, the present study was concerned with more general use of the instrument.

On the basis of the analysis of variance over the correlational data and the intercorrelations of the scoring procedures, it seems safe to conclude that use of the IM procedure and related instruments as was done in this study does not require special consideration of the scoring methods. However, it is mathematically obvious that complete linearity of transformation from one method to another is not maintained after multiplication of two scale values, and scoring techniques may be most crucial for instruments employing standard beliefs and in which specific manipulations of concepts and implicates are desired.

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Appendix A: Example of Format of Experiment I

IM Instrument

1. If one has PEACE, then one has.....

A._____ improbable:___:___:___:___:___:___:___:probable
good :___:___:___:___:___:___:___:bad

B._____ improbable:___:___:___:___:___:___:___:probable
good :___:___:___:___:___:___:___:bad

C._____ improbable:___:___:___:___:___:___:___:probable
good :___:___:___:___:___:___:___:bad

2. If one has FREEDOM, then one has.....

A._____ improbable:___:___:___:___:___:___:___:probable
good :___:___:___:___:___:___:___:bad

B._____ improbable:___:___:___:___:___:___:___:probable
good :___:___:___:___:___:___:___:bad

C._____ improbable:___:___:___:___:___:___:___:probable
good :___:___:___:___:___:___:___:bad

Appendix B: Example of Format of Experiment II IM Instrument

First Sheet of Pair

If one has SYMPATHY, then one has.....

1._____

improbable :___:___:___:___:___:___:___:probable

important :___:___:___:___:___:___:___:unimportant

2._____

improbable :___:___:___:___:___:___:___:probable

important :___:___:___:___:___:___:___:unimportant

3._____

improbable :___:___:___:___:___:___:___:probable

important :___:___:___:___:___:___:___:unimportant

4._____

improbable :___:___:___:___:___:___:___:probable

important :___:___:___:___:___:___:___:unimportant

5._____

improbable :___:___:___:___:___:___:___:probable

important :___:___:___:___:___:___:___:unimportant

6._____

improbable :___:___:___:___:___:___:___:probable

important :___:___:___:___:___:___:___:unimportant

Please be sure to rate each whole sentence on these scales. In other words, consider each of the six numbered words as a completion of the sentence at the top of the page, and rate each of those sentences.

Second Sheet of Pair

On this page, please be sure to rate only your own response on the scale beneath each one.

1._____

good:___:___:___:___:___:___:___:bad

2._____

good:___:___:___:___:___:___:___:bad

3._____

good:___:___:___:___:___:___:___:bad

4._____

good:___:___:___:___:___:___:___:bad

5._____

good:___:___:___:___:___:___:___:bad

6._____

good:___:___:___:___:___:___:___:bad

Note: The format for the instrument where implicates were supplied was identical, except that the blanks were completed.

Appendix C: Listing of Implicates Used in Experiment II Instrument

The implicates are given in the order in which they appeared in the questionnaire beneath the appropriate stimulus concept (underlined). The number in parentheses beside each stimulus refers to its position in the presentation order.

SYMPATHY (1)
pity
kindness
feelings
understanding
friends
love

TRUST (3)
confidence
friends
respect
love
security
faith

RESPECT (4)
admiration
trust
friends
love
knowledge
power

NEGOTIATIONS (5)
trust
compromise
problems
peace
understanding
power

WEALTH (6)
love
money
happiness
security
power
friends

SUCCESS (7)
wealth
friends
happiness
security
money
power

CRIME (8)
fear
punishment
guilt
death
hatred
imprisonment

PEACE (9)
security
love
understanding
friendship
happiness
freedom

FREEDOM (10)
rights
liberty
responsibility
security
happiness
peace

KNOWLEDGE (11)
ability
success
understanding
education
money
intelligence

POWER (12)
money
wealth
strength
control
responsibility
respect

INTEGRATED (2) and
SEGREGATED HOUSING (13)
equality
injustice
higher living standards
better society
inequality
lower living standards

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13. ABSTRACT

The unidimensional and multidimensional models of attitude structure were compared by means of an attitude instrument, the implicative meaning (IM) procedure. The unidimensional model considers the IM procedure an indirect measure of attitudinal affect, whereas the multidimensional model considers it a measure of attitudinal cognition that has some overlap with measures of affect. Correlations between IM scores and an independent measure of affect, semantic differential (SD) evaluations, were obtained. The average level of correlation was quite low ($\bar{x}_r$'s about .40), generally controlling less than 30% of the reliable common variance, across 2 experiments and 3 samples. Several other hypotheses were derived from the models and tested in a factorial design in the second experiment, the results generally supporting the multidimensional model and failing to support the unidimensional model.

14. KEY WORDS

attitude
unidimensional model
multidimensional model
implicative meaning (IM)
implicate
affect (feeling)
cognition (belief)
conation (behavioral intentions)
semantic differential (SD)